Amendments to the Specification:

Please replace the paragraph beginning on page 16, line 14, with the following rewritten paragraph:

The domain block classifying section 32 classifies sorts of domain block images which have been extracted by the domain block extracting section 31. The classification may be performed based upon, for example, standard deviation, a concave/convex degree, and the like of a domain block image. As to sorts to be classified, for example, sorts of domain block images may be classified into a flat portion, a step edge portion, a noise portion, a texture portion, and the like. It should be understood that a deterioration of an image quality such as a blurring phenomenon of an image and a jaggy phenomenon of an image mainly occurs in the step edge portion, and noise occurs in the noise portion. As a consequence, if the processing for improving the image quality is ~~perform d~~ performed with respect to both the step edge portion and the noise portion, then the improvement in the entire image quality can be realized. As a result, while the below-mentioned processing is not performed as to such sorts other than the predetermined sorts (e.g., step edge portion and noise), for example, the flat portion and the texture portion, the system is controlled in such a manner that domain block images of an original image are directly outputted as improved domain block images, so that processing time can be shortened. Also, for example, if only the deterioration of the image quality such as the blurring phenomenon and the jaggy phenomenon of the image is improved, then the below-mentioned improvement of the image quality may be performed as to only the step edge portion. Also, for instance, if only the noise is improved, then the below-mentioned improvement of the image quality may be performed as to only the noise portion. It should also be understood that if such a process control processing by classifying the domain block image is not performed, but also an edge enhancement processing (will be explained later) by the edge enhancement processing section 37 is not performed, then the

image quality improving processing section 3 may be arranged without employing this domain block classifying section 32.

Please replace the paragraph beginning on page 29, line 17, with the following rewritten paragraph:

In general, it may be predicted that a domain block image is similar to a range block image which contains this domain block image. When such an assumption can be established, noise is removed by executing a reducing processing in such a manner that this noise is weighted-added to neighborhood pixels. Also, since a total number of pixels is reduced, a stepped portion of gradation may become conspicuous and an edge portion is emphasized, so that a blurring phenomenon may be reduced to some extent. Furthermore, a jaggy phenomenon appearing on an emphasized edge portion may be ~~reduce d~~ reduced to some extent by performing a weighted-adding calculation. However, this reduction may be realized under such an initial condition that the domain block image is similar to the range block image. To this end, such a range block image which is similar to the domain block image is selected in the next step.

Please replace the paragraph beginning on page 30, line 7, with the following rewritten paragraph:

Returning back to the flow chart of Fig. 2, in a step S66, the similarity degree judging section 35 judges a similarity degree between the domain block image and a reduced range block image which is formed from each of the range block images in the step S65. In this step S66, since the pixel value converting is performed with respect to the reduced range block image, the similarity degree judging section 35 selects such a reduced range block image having both a pixel value and a pattern, which are the most similar to those of the domain block image, and acquires the information related to the similarity degree obtained at this time. First, as to pixel values $\{r_{ijk}|i, j = 1, 2, 3, k = 1, ---, 4\}$ of all of the reduced range

block images, the similarity degree judging section 35 calculates a pixel averaged value "Rvk $= \Sigma r_{ijk}/9$, and pixel standard deviation "VRvk $= \Sigma (r_{ijk} - Rvk)^2$." Next, the similarity degree judging section 35 calculates both conversion coefficients "a_k" and "b_k", and also, ~~an~~ a conversion error $E_k = \Sigma (d_{ij} - a_k \times r_{ijk} - b_k)^2$ in such a case that the pixel values "z" of the reduced range block image are least-squares-approximated respectively by using the linear conversion transformation "az + b" to the corresponding pixel values of the domain block image. It should be understood that the conversion coefficients "a_k" and "b_k", and also, the conversion error "E_k" may be directly obtained by performing the below-mentioned calculation formulae. It should also be noted that as "Dv" and "Vdv", the values calculated in the domain block classifying section 32 may be used.

Please replace the paragraph beginning on page 31, line 15, with the following rewritten paragraph:

With respect to the respective conversion coefficients "a_k (k = 1, ---, 4)", a check is made as to whether or not the conversion coefficient "a_k" is contained in the above-described allowable range, and only the conversion coefficients "a_k" which are involved in the allowable range are collected to be defined as a set "G." Next, assuming now that E = min {E_k|k is an element of G} it is so set that a = a_k and b = b_k with respect to "k" where E = E_k. A reduced range block image which is indicated by this "k" is the most resemblant image as to the domain block image. It should be noted that since the conversion coefficient "b_k" is not actually required to determine the conversion error "E_k", such a "k" is calculated by which the conversion ~~rror~~ error "E_k" becomes minimum, and after the conversion coefficient "a_k" has been finally determined, the conversion coefficient "b_k" may be calculated.

Please replace the paragraph beginning on page 35, line 19, with the following rewritten paragraph:

In a step S70, the improved domain block image to which the edge enhancement processing has been performed in the above-explained manner is added/written with respect to a memory region used for improving an image quality in the memory section 2 (see Fig. ~~2F~~ 3F). When the edge enhancement processing is not performed, the improved domain block image itself which has been formed in the improved domain block forming section 34 is added/written into the image quality improving memory ~~r gion~~ region contained in the memory section 2. Also, in such a case that the classified sort corresponds to the texture portion, or the flat portion other than the edge portion and the noise portion, the domain block image itself extracted by the domain block extracting section 31 is added/written into the image quality improving memory region contained in the memory section 2. This adding/writing is performed as follows: That is, while a pixel value of an image writing memory region is read out from the memory section 2, this read pixel value is added to a pixel value of a resultant improved domain block image, or the like, and then, the added pixel value is newly written into the same memory position of the image writing memory region.

Please replace the paragraph beginning on page 42, line 12, with the following rewritten paragraph:

As a result of classifying a domain block image by the domain block classifying section 32, when this domain block image is classified into either a noise portion or an edge portion, the range block extracting section 33 extracts a range block image from an original image. Fig. 10 is an explanatory diagram for explaining another example of a range block image extracting processing executed in the range block forming section 34. In this second example, as represented in Fig. 10, 5 × 5 blocks are selected in such a manner that the domain block image is contained in a center position thereof. In this case, only one range block

image is extracted.—it— It is apparent that if an extracting range of range block images is widened, then a plurality of range block images may be retrieved. As explained above, as shown in Fig. 10, in this second example, one range block image is extracted in a fixing manner. While range block images are extracted, such a range block image having 5 × 5 pixels which contains a domain block image having 3 × 3 pixels at a center position thereof cannot be extracted at an edge portion of this image. In such a case, for instance, a range block image may be selected from a position which is positionally shifted from 1 pixel.

Please replace the paragraph beginning on page 48, line 24, with the following rewritten paragraph:

It should also be noted that as to the respective R, G, B color components, different classifications may be performed in the domain block classifying s ction section 32. In this case, different processing may be performed in response to the classification result. For example, where there is a blue-colored edge, a B-color component may be recognized as the edge portion, whereas both an R color component and a G color component are recognized as the flat portions. In this case, the local collage processing is performed with respect to a domain block image of the B color component, and no processing is performed with respect to domain block images of the R color component and the G color component, and then, a domain block itself may be selected as the improved domain block image.

Please replace the paragraph beginning on page 49, line 15, with the following rewritten paragraph:

Next, a fourth example is described. This fourth example describes such an example that when a binary image is processed to obtain a multi-value image, this multi-value image is processed by an antialiasing processing so as to correct a jaggy portion. In this fourth example, it is so assumed that a similar processing to that of the above-explained second example is performed, and only different portions from these of the second example will be

explained. A blurring element is not present in a binary image, and a noise portion cannot be separated from a texture portion. As a consequence, as sorts to be classified by the domain block classifying section 32, only a flat portion, an edge portion, and a ~~textur~~ texture portion are classified. Accordingly, only the edge portion is processed by the local collage processing in an actual case. Also, since the binary image corresponds to such an image whose edge becomes conspicuous, a jaggy portion of the edge portion becomes especially conspicuous. As a result, the edge enhancement processing is not performed as to this edge portion. Otherwise, an emphasis parameter may be selected to be 0.

Please replace the paragraph beginning on page 51, line 24, with the following rewritten paragraph:

As previously explained, in accordance with the fourth example, the binary image is once converted into the multi-value image, and then, the local collage processing is performed as to this multi-value image. As a result, the jaggy portion produced when the binary image is converted into the multi-value image can be properly corrected by the antialiasing processing. As apparent from the foregoing explanation, even in such a case that a total gradation number is increased, for example, a 16-color image, this color image may be processed in a similar manner to that of this fourth embodiment. Also, in such a case that a color image is mixed with a limited-color image, for example, such a method may be employed that a total color number within a 3 × 3 domain block image is counted with respect only to a block which has been classified to the edge portion, and thereafter, the smaller the total color number becomes, the weaker the edge enhancement parameter becomes. Further, in the case of a natural image (24-bit image, and 256-gray image), there are many cases that a total color number within a 3 × 3 domain block image of an edge portion becomes 5 colors, or more. However, in the case of a limited-color image with a color map, there are many cases that a total color number of a 3 × 3 domain block image of an edge portion becomes

smaller than, or equal to 5 colors. As a consequence, the smaller the total color number

becomes, the smaller the edge enhancement parameter is decreased, so that the edge

enhancement strength is weakened, and the antialiasing effect is increased. On the other

hand, when the total color number is larger than, or equal to 5 colors, this color image is

regarded as the natural imag, image, and thus may be processed in a similar manner to that of

the third example. As previously explained, the edge enhancement parameter is judged by

employing not only the standard deviation value, but also the total color number within the

block, so that even when the color image is mixed with the limited-color image, the image

can be processed without any problem.

Please replace the paragraph beginning on page 53, line 14, with the following

rewritten paragraph:

Next, a fifth example is explained. Fig. 12 is a block diagram for explaining a

processing executed in the fifth example of the present invention. In this drawing, reference

numeral 6 shows an enlarging processing section. In this fifth example, such an example is

explained in which the image quality improving processing according to the present invention

is combined with an enlarging technique, and the combined technical processing is utilized.

As an original image, for example, a VGA image (namely, 640 × 480 pixels, JPEG-

compressed image) photographed by a digital camera is used. When such a VGA image is

printed on an A4-sized paper in a full-size mode, when output resolution is assumed as 300

dpi, an image enlargement factor by 4.96 times is required. As an arrangement capable of

nlarging enlarging this image, the enlarging processing section 6 is provided.

Please replace the paragraph beginning on page 54, line 24, with the following

rewritten paragraph:

Under such a circumstance, before an enlarging processing by the enlarging

processing section 6 is performed, such a processing as explained in, for example, the second

example and the third example of the present invention is performed in the image quality improving processing section 3, so that an image quality may be improved. As a result, the noise portions, the jaggy portions, and the blurring portions can be comprehensively improved. This reason will now be summarized. In the local collage processing executed in the present invention, the domain block image is replaced by the improved domain block image which is formed from the range block image having the wider area and containing this domain block image. As a result, the resemblant characteristic of the replaced area with respect to the neighborhood images is increased. In this case, when such a local self-similarity of an image is assumed, the image to which the processing of the present invention has been executed may become such an image capable of satisfying this local self-similarity. This local self-similarity of the image implies that "In an ideal image, a domain block image and a range block image similar to the domain block image are located very close to each other with the same direction. Also, a similarity degree thereof (conversion parameter "a" in least squares method) does not depend upon a scale (resolution)." The reason is given as follows: In accordance with the local collage processing of the present invention, the range block image which is similar to the domain block image and contains the domain block image is selected so as to form the improved domain block image. Also, when this improved domain block image is formed, ~~th~~ the converting processing is performed by employing the similarity degree. Conversely speaking, in accordance with the present invention, the image is corrected in such a manner that the local self-similarity can be satisfied. Since the image is corrected in such a manner that the local self-similarity can be satisfied as explained above, the assumed "ideal image" can be obtained, and the visually better image can be acquired. Such a feature may also be realized in the above-explained first to fourth examples.